UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/990,186	11/20/2001	Qiang Liu	8325-0011.21	1799

20855 7590 12/19/2003

ROBINS & PASTERNAK
1731 EMBARCADERO ROAD
SUITE 230
PALO ALTO, CA 94303

EXAMINER	
CHAKRABARTI, ARUN K	

ART UNIT	PAPER NUMBER
1634	

DATE MAILED: 12/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)
09/990,186	LIU
Examiner	**Art Unit**
Arun Chakrabarti	1634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Nov 7, 2003* .

2a) ☐ This action is **FINAL.** 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1* is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). *1003*
4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *Detailed Action*

DETAILED ACTION

Election/Restriction

1. Applicant's election with traverse of QRSNLVR for F1, QSGNLAR for F2, and QSGNLAR for F3 in Paper No. 1003 is acknowledged. The traversal is on the ground(s) that there is no lack of unity in this claimed invention. This is found persuasive and therefore all species are hereby being examined.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claim 1 is rejected under 35 U.S.C. 103(a) as being obvious over Eisenberg et al. (U.S. Patent 6,453,242 B1) (September 17, 2002) in view of Barbas (U.S. Patent 6,140,081) (October 31, 2000) further in view of Case et al. (U.S. Patent 6,503,717 B2) (January 7, 2003).

Eisenberg et al. teaches a method for designing a zinc finger protein comprising a first (F1), a second (F2), and a third (F3) zinc finger, ordered F1, F2, F3 from N-terminus to C-terminus that binds to a target site comprising, in a 3' to 5' direction, a first (S1), a second (S2),

and a third (S3) target subsite, each target subsite having the nucleotide sequence GNN, the method comprising the steps of:

selecting the F1 zinc finger such that it binds to the S1 target subsite, selecting the F2 zinc finger such that it binds to the S2 target subsite, and selecting the F3 zinc finger such that it binds to the S3 target subsite, thereby designing a zinc finger protein that binds to a target site (Figure 2, Example 6, and Column 20, line 25 to Column 22, line 42).

Moreover, Eisenberg et al. teaches a method for database designing any novel zinc finger protein based on a preselected target site (Column 20, line 25 to Column 22, line 42), as Eisenberg et al. states, "The invention provides methods for design of ZFPs to a preselected site. These methods are suitable for use in conjunction with the methods of target site selection described above, or by other methods of target site selection (Column 20, lines 25-28)".

Eisenberg et al does not teach a method of selecting the F1 zinc finger such that it binds to the S1 target subsite, wherein if S1 comprises GAA, F1 comprises the amino acid sequence QRSNLVR.

Barbas teaches a method of selecting the F1 zinc finger such that it binds to the S1 target subsite, wherein if S1 comprises GAA, F1 comprises the amino acid sequence QRSNLVR (Figure 1A).

It would have been *prima facie* obvious to one having ordinary skill in the art at the time the invention was made to combine and substitute the method of selecting the F1 zinc finger such that it binds to the S1 target subsite, wherein if S1 comprises GAA, F1 comprises the amino acid

sequence QRSNLVR of Barbas into the computerized method of database designing any novel zinc finger protein based on a preselected target site of Eisenberg et al , since Barbas states, "More particularly, the present invention pertains to amino acid residue sequences within the alpha-helical domain of zinc fingers that specifically bind to target nucleotides of the formula 5'-(GNN)-3' (Column 1, lines 11-14)." An ordinary practitioner would have been motivated to combine and substitute the method of selecting the F1 zinc finger such that it binds to the S1 target subsite, wherein if S1 comprises GAA, F1 comprises the amino acid sequence QRSNLVR of Barbas into the computerized method of database designing any novel zinc finger protein based on a preselected target site of Eisenberg et al., in order to achieve the express advantages noted by Cantor, of an invention which pertains to amino acid residue sequences within the alpha-helical domain of zinc fingers that specifically bind to target nucleotides of the formula 5'- (GNN)-3'.

Eisenberg et al. in view of Barbas do not teach a method of selecting the F2 and F3 zinc fingers such that it binds to the S2 and S3 target subsite, wherein if S2 and S3 comprise GAA, F2 and F3 comprise the amino acid sequence QSGNLAR.

Case et al. teaches a method of selecting the F2 and F3 zinc fingers such that it binds to the S2 and S3 target subsite, wherein if S2 and S3 comprise GAA, F2 and F3 comprise the amino acid sequence QSGNLAR (Example 1, Table 1).

It would have been *prima facie* obvious to one having ordinary skill in the art at the time the invention was made to combine and substitute the method of selecting the F2 and F3 zinc fingers such that it binds to the S2 and S3 target subsite, wherein if S2 and S3 comprise GAA, F2

and F3 comprise the amino acid sequence QSGNLAR of Case et al. into the computerized method of database designing any novel zinc finger protein based on a preselected target site of Eisenberg et al in view of Barbas, since Case et al. states, "Therefore, efficient high throughput library screening methods, allowing random inhibition or activation of uncharacterized genes would be of great utility to the scientific community. These methods would find widespread use in academic laboratories, pharmaceutical companies, genomics companies, agricultural companies, chemical companies, and in biotechnology industry (Column 2, lines 45-51)." An ordinary practitioner would have been motivated to combine and substitute the method of selecting the F2 and F3 zinc fingers such that it binds to the S2 and S3 target subsite, wherein if S2 and S3 comprise GAA, F2 and F3 comprise the amino acid sequence QSGNLAR of Case et al. into the computerized method of database designing any novel zinc finger protein based on a preselected target site of Eisenberg et al in view of Barbas, in order to achieve the express advantages noted by Case et al., of an invention which provides efficient high throughput library screening methods, allowing random inhibition or activation of uncharacterized genes that would be of great utility to the scientific community and which would find widespread use in academic laboratories, pharmaceutical companies, genomics companies, agricultural companies, chemical companies, and in biotechnology industry.

Eisenberg et al. in view of Barbas further in view of Case et al do not teach the other combinations of nucleotide sequences and corresponding amino acid sequences of the target subsites of the claimed invention.

However, it is *prima facie* obvious from the teaching and suggestion of Eisenberg et al. that designing any novel zinc finger protein by selection of the specific combinations of nucleotide sequences and corresponding amino acid sequences represents routine optimization with regard to the preselected target site, which routine optimization parameters are explicitly recognized to an ordinary practitioner in the relevant art. As noted *In re Aller*, 105 USPQ 233 at 235,

> More particularly, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.

Routine optimization is not considered inventive and no evidence has been presented that the specific combinations of nucleotide sequences and corresponding amino acid sequences was other than routine, that the products resulting from the optimization have any unexpected properties, or that the results should be considered unexpected in any way as compared to the closest prior art.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arun Chakrabarti, Ph.D. whose telephone number is (703) 306-5818. This phone number will be changed to (571)-272-0740 on and from January 14, 2003.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion, can be reached on (703) 308-1119.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group analyst Chantae Dessau whose telephone number is (703) 605-1237.

Papers related to this application may be submitted to Technology Center 1600 by facsimile transmission via the P.T.O. Fax Center located in Crystal Mall 1. The CM1 Fax Center numbers for Technology Center 1600 is (703) 872-9306. Please note that the faxing of such papers must conform with the Notice to Comply published in the Official Gazette, 1096 OG 30 (November 15, 1989).

Arun kr. Chakrabarti

ARUN K. CHAKRABARTI
PATENT EXAMINER

Arun Chakrabarti
Patent Examiner
Art Unit 1634

November 26, 2003

GARY BENZION, PH.D
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600